THE JOURNAL

OF

BIOLOGICAL CHEMISTRY

FOUNDED BY CHRISTIAN A. HERTER AND SUSTAINED IN PART BY THE CHRISTIAN A. HERTER MEMORIAL FUND

EDITED FOR THE AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS

EDITORIAL BOARD

RUDOLPH J. ANDERSON
W. MANSFIELD CLARK
HANS T. CLARKE
CARL F. CORI
EDWARD A. DOISY
A. BAIRD HASTINGS
HOWARD B. LEWIS
ELMER V. McCOLLUM
WILLIAM C. ROSE
WILLIAM C. STADIE
DONALD D. VAN SLYKE
HUBERT B. VICKERY

VOLUME 146
BALTIMORE
1942

COPYRIGHT, 1942
BY
THE AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, INC.

PUBLISHED AT YALE UNIVERSITY FOR
THE AMERICAN SOCIETY OF BIOLOGICAL CHEMISTS, INC.
WAVERLY PRESS, INC.
BALTIMORE, U. S. A.

R.G

Medical
Wales
cop. 2

CONTENTS OF VOLUME 146

No. 1, November, 1942

PAGE

Scudi, John V., and Buhs, Rudolf P. Determination of the tocopherols and the tocopherylquinones by the colorimetric oxidation-reduction method.... 1

Baumann, C. A., Field, John B., Overman. Ralph S., and Link, Karl Paul. Studies on the hemorrhagic sweet clover disease. X. Induced vitamin C excretion in the rat and its effect on the hypoprothrombinemia caused by 3,3′-methylenebis(4-hydroxycoumarin)..... 7

Hess, W. C., and Sullivan, M. X. The quantitative determination of lanthionine..... 15

Jukes, Thomas H., and Welch, A. D. The effect of certain analogues of choline on perosis..... 19

Stanley, W. M., and Anderson, Thomas F. Electron micrographs of protein molecules. Plates 1 and 2..... 25

Folch, Jordi. The nature of the glycerophosphoric acid present in phosphatides 31

Folch, Jordi. Brain cephalin, a mixture of phosphatides. Separation from it of phosphatidyl serine, phosphatidyl ethanolamine, and a fraction containing an inositol phosphatide..... 35

MacLachlan, P. L. Fat metabolism in the lungs..... 45

Ross, William F., and Wood, Thomas R. The partial purification and some observations on the nature of the parathyroid hormone..... 49

Wood, Thomas R., and Ross, William F. The ketene acetylation of the parathyroid hormone..... 59

Tracy, Ann H., and Ross, William F. Carbon suboxide and proteins. VII. Malonyl pepsin..... 63

Tarver, Harold, and Schmidt, Carl L. A. Radioactive sulfur studies. I. Synthesis of methionine*. II. Conversion of methionine sulfur to taurine sulfur in dogs and rats. III. Distribution of sulfur* in the proteins of animals fed sulfur* or methionine*. IV. Experiments *in vitro* with sulfur* and hydrogen sulfide*..... 69

Eadie, G. S. The inhibition of cholinesterase by physostigmine and prostigmine. 85

Schachner, H., Fries, B. A., and Chaikoff, I. L. The effect of hexoses and pentoses on the formation *in vitro* of phospholipid by brain tissue as measured with radioactive phosphorus..... 95

West, Edward S., and Rinehart, Robert E. Reaction of ninhydrin with ascorbic acid and other endiol compounds. Decarboxylation of dehydroascorbic acid..... 105

Landy, Maurice, and Dicken, Dorothy M. A microbiological method for the determination of *p*-aminobenzoic acid..... 109

Hoagland, Charles L., and Ward, S. M. The quantitative determination of factor V by measurement of nitrite produced by *Hemophilus influenzae*..... 115

Devlin, Henry B., and Mattill, H. A. The chemical determination of tocopherols in muscle tissue..... 123

Featherstone, Robert M., and Berg, Clarence P. The comparative availabilities of *d*(+)- and *l*(−)-histidine for the production of liver glycogen.... 131

VAN SLYKE, DONALD D., HILLER, ALMA, and DILLON, ROBERT T. Solubilities and compositions of the phospho-12-tungstates of the diamino acids and of proline, glycine, and tryptophane 137
SCHOLANDER, P. F. Analyzer for quick estimation of respiratory gases 159
THEIS, EDWIN R., and JACOBY, T. F. The acid-base-binding capacity of collagen. 163
FLINK, EDMUND BERNEY, and WATSON, CECIL JAMES. A method for the quantitative determination of hemoglobin and related heme pigments in feces, urine, and blood plasma 171
PETERS, JOHN H. The determination of creatinine and creatine in blood and urine with the photoelectric colorimeter 179
SMITH, ELIZABETH R. B., and SMITH, PAUL K. Thermodynamic properties of solutions of amino acids and related substances. VIII. The ionization of glycylglycine, ε-aminocaproic acid, and aspartic acid in aqueous solution from one to fifty degrees 187
BEECHER, H. K., FOLLANSBEE, R., MURPHY, A. J., and CRAIG, F. N. Determination of the oxygen content of small quantities of body fluids by polarographic analysis 197
POWELL, ROSS C., JR., and SHAW, J. C. The non-utilization of lactic acid by the lactating mammary gland 207
SUMNER, ROBERT J. Lipid oxidase studies. II. The specificity of the enzyme lipoxidase 211
SUMNER, ROBERT J. Lipid oxidase studies. III. The relation between carotene oxidation and the enzymic peroxidation of unsaturated fats 215
GOULD, BERNARD S., TYTELL, ALFRED A., and JAFFE, HERBERT. Biochemistry of *Fusaria*. The influence of diphosphopyridine nucleotide on alcoholic fermentation (*in vivo*) 219
DARBY, WILLIAM J., and LEWIS, HOWARD B. Urocanic acid and the intermediary metabolism of histidine in the rabbit 225
DAKIN, H. D. On lysine and ornithine 237
SURE, BARNETT, and FORD, ZENAS W., JR. Vitamin interrelationships. II. Thiamine and riboflavin interrelationships in metabolism 241
ELLIOTT, K. A. C., SCOTT, D. B. MCNAIR, and LIBET, B. Studies on the metabolism of brain suspensions. II. Carbohydrate utilization 251

Letters to the Editors

SILBER, ROBERT H., and MUSHETT, CHARLES W. pH change as a measure of growth of *Lactobacillus casei* in vitamin assays 271
WOOLLEY, D. W., and KRAMPITZ, L. O. Reversal by phosphatides of the antimicrobial action of a crystalline protein from wheat 273
STRAIN, HAROLD H., and MANNING, WINSTON M. Isomerization of chlorophylls *a* and *b* 275
LAMPEN, J. O., UNDERKOFLER, L. A., and PETERSON, W. H. *p*-Aminobenzoic acid, a growth factor for *Acetobacter suboxydans* 277

No. 2, DECEMBER, 1942

BOYD, M. JOHN, and LOGAN, MILAN A. Colorimetric determination of serine ... 279
UTTER, M. F., and WERKMAN, C. H. Effect of metal ions on the reactions of phosphopyruvate by *Escherichia coli* 289
HOUCHIN, O. BOYD, and MATTILL, H. A. The oxygen consumption, creatine, and chloride content of muscles from vitamin E-deficient animals as influenced by feeding α-tocopherol 301

HOUCHIN, O. BOYD, and MATTILL, H. A. The influence of parenteral administration of α-tocopherol phosphate on the metabolic processes in dystrophic muscle 309
HOUCHIN, O. BOYD. The *in vitro* effect of α-tocopherol and its phosphate derivative on oxidation in muscle tissue 313
WOOLF, RALPH B., VIERGIVER, ELLENMAE, and ALLEN, WILLARD M. Study of the distribution of sodium pregnanediol glucuronidate between *n*-butanol and urine of pregnant women, together with its practical application 323
MILLER, GAIL LORENZ, and STANLEY, W. M. Derivatives of tobacco mosaic virus. II. Carbobenzoxy, *p*-chlorobenzoyl, and benzenesulfonyl virus 331
MILLER, GAIL LORENZ. Derivatives of tobacco mosaic virus. III. The rôle of denaturation of the virus in the measurement of phenolic groups 339
MILLER, GAIL LORENZ. Derivatives of tobacco mosaic virus. IV. A study of the determination of phenol groups in virus derivatives by means of model experiments with derivatives of tyrosine 345
PAVCEK, P. L., and SHULL, G. M. Inactivation of biotin by rancid fats 351
HANDLER, PHILIP, and DANN, W. J. The inhibition of rat growth by nicotinamide 357
VENNING, ELEANOR H., HOFFMAN, M. M., and BROWNE, J. S. L. Isolation of androsterone sulfate 369
HESS, W. C., and SULLIVAN, M. X. Canine cystinuria. The cystine output on an arachin diet 381
MELNICK, JOSEPH L. The photochemical spectrum of cytochrome oxidase 385
BAER, ERICH. A suggested mechanism of biological acylations. I. The formation of acetylcholine 391
ALEXANDER, BENJAMIN, and LEVI, J. ELLIOT. A simple method for the chemical determination of urinary thiamine based upon the Prebluda-McCollum reaction 399
BENNETT, EMMETT. The hemicelluloses of forage plants 407
FRIEDENWALD, JONAS S., and HERRMANN, HEINZ. The inactivation of amine oxidase by enzymatic oxidative products of catechol and adrenalin 411
DUBOS, RENÉ J., HOTCHKISS, ROLLIN D., and COBURN, ALVIN F. The effect of gramicidin and tyrocidine on bacterial metabolism 421
SANDKUHLE, J., KIRK, PAUL L., and CUNNINGHAM, BURRIS. Quantitative drop analysis. XVII. Gasometric determination of amino nitrogen 427
MAYER, DENNIS T., and GULICK, ADDISON. The nature of the proteins of cellular nuclei 433
LEWIS, J. C. A *Lactobacillus* assay method for *p*-aminobenzoic acid 441
GRANICK, S. Ferritin. I. Physical and chemical properties of horse spleen ferritin 451
FRUTON, JOSEPH S. Synthesis of peptides of *l*-serine 463
COHEN, SEYMOUR S. The electrophoretic mobilities of desoxyribose and ribose nucleic acids 471
DU VIGNEAUD, VINCENT, MELVILLE, DONALD B., FOLKERS, KARL, WOLF, DONALD E., MOZINGO, RALPH, KERESZTESY, JOHN C., and HARRIS, STANTON A. The structure of biotin: a study of desthiobiotin 475
MELVILLE, DONALD B., MOYER, A. W., HOFMANN, KLAUS, and DU VIGNEAUD, VINCENT. The structure of biotin: the formation of thiophenevaleric acid from biotin 487
LEVY, MILTON, and PALMER, ALBERT H. The benzoylation and resolution of alanine 493

ADOLPH, WILLIAM H., and LIANG, CHIH-CHUAN. The fate of oxalic acid administered to the rat 497
SEALOCK, ROBERT RIDGELY. The effect of dicarboxylic acid administration upon the excretion of tyrosine metabolites by the guinea pig 503
SEEGERS, WALTER H., and MCGINTY, DANIEL A. Further purification of thrombin: probable purity of products 511
LOWRY, OLIVER H., SMITH, CLEMENT A., and COHEN, DOROTHY L. A microcolorimetric method for measuring the oxygen saturation of blood 519
SAIFER, ABRAHAM, HUGHES, JAMES, and WEISS, ETHEL. Determination of chlorides in biological fluids by the use of adsorption indicators. A new method for the determination of the plasma volume of blood 527
PETERSON, RALPH E. Essential factors for the growth of the ciliate protozoan, *Colpidium campylum* 537
WEGNER, M. I., KEMMERER, A. R., and FRAPS, G. S. Influence of the method of preparation of sample on microbiological assay for riboflavin 547
HALE, E. B., DAVIS, G. K., and BALDWIN, H. R. The chemical determination of nicotinic acid in plant materials 553
HALE, E. B., DAVIS, G. K., and BALDWIN, H. R. The distribution of nicotinic acid in feeds 565
JONES, D. BREESE, DIVINE, J. P., and HORN, MILLARD J. A study of the availability of mesolanthionine for the promotion of growth when added to a cystine-deficient diet 571
HUNTER, F. EDMUND, and LEVY, SYLVIA RUTH. Occurrence and rate of turnover of sphingomyelin in tissues of normal and tumor-bearing rats 577
REINER, L., MOORE, DAN H., LANG, E. H., and GREEN, MILTON. Electrophoretic components of globin 583
MASON, HAROLD L., and WILLIAMS, RAY D. Determination of thiamine in urine by the thiochrome method: estimation of the blank 589
ORMSBY, ANDREW A. A direct colorimetric method for the determination of urea in blood and urine 595
DRABKIN, DAVID L. Spectrophotometric studies. X. Structural interpretation of the spectra of cyanide, pyridine, and carbon monoxide derivatives of cytochrome *c* and hemoglobin 605
SCHLENK, F. Identification of the carbohydrate group in the nicotinamide nucleotides 619
LI, CHOH HAO, SIMPSON, MIRIAM E., and EVANS, HERBERT M. Studies on pituitary lactogenic hormone. VII. A method of isolation 627
LI, CHOH HAO. Studies on pituitary lactogenic hormone. VIII. Diffusion and viscosity measurements 633
SNYDER, FRED H., and TWEEDY, WILBUR R. The effects of a magnesium-deficient diet on the serum phosphatase activity in the albino rat 639
DEUEL, HARRY J., JR., and DAVIS, ADELLE. The sexual variation in carbohydrate metabolism. X. The comparative glucose tolerance of normal rats and those with fatty livers 649
HIGHET, DORIS M., and WEST, EDWARD S. A procedure for the determination of ascorbic acid based upon the use of a standardized solution of 2,6-dichlorophenol indophenol in xylene 655
DAVIS, BERNARD D., HOLLAENDER, ALEXANDER, and GREENSTEIN, JESSE P. Electrophoretic patterns, colloid osmotic pressure, and viscosity of serum denatured by ultraviolet radiation 663
BOYER, PAUL D., LARDY, HENRY A., and PHILLIPS, PAUL H. The rôle of potassium in muscle phosphorylations 673

Letters to the Editors

ROSE, WILLIAM C., HAINES, WILLIAM J., and JOHNSON, JULIUS E. The rôle of the amino acids in human nutrition 683
SIMMONDS, SOFIA, and DU VIGNEAUD, VINCENT. Transmethylation as a metabolic process in man 685

INDEX TO VOLUME 146 687